## SPEC ACCEL™ ACC Result

### Supermicro

*(Test Sponsor: NVIDIA Corporation)*

**Tesla V100-PCIE-16GB**

**SuperServer 1029GQ-TRT**

<table>
<thead>
<tr>
<th>SPECaccel_acc_peak</th>
<th>SPECaccel_acc_base</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.5</td>
<td>11.5</td>
</tr>
</tbody>
</table>

**ACCEL license:** 019  
**Test date:** Jul-2018

**Test sponsor:** NVIDIA Corporation  
**Hardware Availability:** Nov-2017

**Tested by:** NVIDIA Corporation  
**Software Availability:** Aug-2018

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**Hardware**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Name:</td>
<td>Intel Xeon Gold 6148</td>
</tr>
<tr>
<td>CPU Characteristics:</td>
<td></td>
</tr>
<tr>
<td>CPU MHz:</td>
<td>2400</td>
</tr>
<tr>
<td>CPU MHz Maximum:</td>
<td>3700</td>
</tr>
<tr>
<td>FPU:</td>
<td>Integrated</td>
</tr>
<tr>
<td>CPU(s) enabled:</td>
<td>40 cores, 2 chips, 20 cores/chip, 2 threads/core</td>
</tr>
<tr>
<td>CPU(s) orderable:</td>
<td>1,2 chips</td>
</tr>
<tr>
<td>Primary Cache:</td>
<td>32 KB I + 32 KB D on chip per core</td>
</tr>
<tr>
<td>Secondary Cache:</td>
<td>1 MB I+D on chip per core</td>
</tr>
<tr>
<td>L3 Cache:</td>
<td>28160 KB I+D on chip per chip</td>
</tr>
<tr>
<td>Other Cache:</td>
<td>None</td>
</tr>
</tbody>
</table>

**Accelerator**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accel Model Name:</td>
<td>Tesla V100</td>
</tr>
<tr>
<td>Accel Vendor:</td>
<td>NVIDIA Corporation</td>
</tr>
<tr>
<td>Accel Name:</td>
<td>Tesla V100-PCIE-16GB</td>
</tr>
<tr>
<td>Type of Accel:</td>
<td>GPU</td>
</tr>
<tr>
<td>Accel Connection:</td>
<td>PCIe</td>
</tr>
<tr>
<td>Does Accel Use ECC:</td>
<td>Yes</td>
</tr>
<tr>
<td>Accel Description:</td>
<td>See notes</td>
</tr>
<tr>
<td>Accel Driver:</td>
<td>NVIDIA UNIX x86_64 Kernel Module 390.46</td>
</tr>
</tbody>
</table>

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Continued on next page
### SPEC ACCEL ACC Result

**Supermicro**  
(Test Sponsor: NVIDIA Corporation)  
**Tesla V100-PCIE-16GB**  
**SuperServer 1029GQ-TRT**  

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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</thead>
<tbody>
<tr>
<td>303.ostencil</td>
<td>9.23</td>
<td>15.7</td>
<td>9.16</td>
<td>15.8</td>
<td>9.16</td>
<td>15.8</td>
<td>9.23</td>
<td>15.7</td>
<td>9.16</td>
<td>15.8</td>
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<td>304.olbm</td>
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<td>22.9</td>
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<tr>
<td>350.md</td>
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<td>11.2</td>
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<td>22.3</td>
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<td>351.palm</td>
<td>141</td>
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<td>2.64</td>
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<td>140</td>
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<td>354.cg</td>
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<td>355.seismic</td>
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<td>356.sp</td>
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<td>14.0</td>
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<td>19.2</td>
<td>14.0</td>
<td>19.3</td>
<td>14.0</td>
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<td>360.ibdc</td>
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<td>12.0</td>
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<tr>
<td>363.swim</td>
<td>74.6</td>
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<td>370.bt</td>
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<td>8.92</td>
<td>25.0</td>
<td>8.79</td>
<td>25.4</td>
<td>8.78</td>
<td>25.4</td>
</tr>
</tbody>
</table>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

### Submit Notes

The config file option 'submit' was used.  
Submit command: numactl -C 1 -m 0 $command
Supermicro
(Test Sponsor: NVIDIA Corporation)
Tesla V100-PCIE-16GB
SuperServer 1029GQ-TRT

SPECaccel_acc_peak = 11.5
SPECaccel_acc_base = 11.5

ACCEL license: 019
Test date: Jul-2018
Test sponsor: NVIDIA Corporation
Hardware Availability: Nov-2017
Tested by: NVIDIA Corporation
Software Availability: Aug-2018

Operating System Notes
Stacksize set to 'unlimited'

Platform Notes
Sysinfo program /local/home/aglobus/spec-accel/Docs/sysinfo
$Rev: 6965 $ $Date:: 2015-04-21 #$ c05a7f14b1b1765e3fe1df68447e8a35
running on perf-sky2.pgi.net Wed Jul 25 20:12:07 2018

This section contains SUT (System Under Test) info as seen by
some common utilities. To remove or add to this section, see:
http://www.spec.org/accel/Docs/config.html#sysinfo

From /proc/cpuinfo
model name : Intel(R) Xeon(R) Gold 6148 CPU @ 2.40GHz
 2 "physical id"s (chips)
 80 "processors"
cores, siblings (Caution: counting these is hw and system dependent. The
following excerpts from /proc/cpuinfo might not be reliable. Use with
cautions.)
cpu cores : 20
siblings : 40
physical 0: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
physical 1: cores 0 1 2 3 4 8 9 10 11 12 16 17 18 19 20 24 25 26 27 28
cache size : 28160 KB

From /proc/meminfo
MemTotal:       394873648 kB
HugePages_Total:      20
Hugepagesize:       2048 kB
/usr/bin/lsb_release -d
CentOS Linux release 7.4.1708 (Core)

From /etc/*release* /etc/*version*
centos-release: CentOS Linux release 7.4.1708 (Core)
centos-release-upstream: Derived from Red Hat Enterprise Linux 7.4 (Source)
os-release:
  NAME="CentOS Linux"
  VERSION="7 (Core)"
  ID="centos"
  ID_LIKE="rhel fedora"
  VERSION_ID="7"
  PRETTY_NAME="CentOS Linux 7 (Core)"
  ANSI_COLOR="0;31"
  CPE_NAME="cpe:/o:centos:centos:7"
redhat-release: CentOS Linux release 7.4.1708 (Core)
system-release: CentOS Linux release 7.4.1708 (Core)
system-release-cpe: cpe:/o:centos:centos:7

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Supermicro
(Test Sponsor: NVIDIA Corporation)
Tesla V100-PCIE-16GB
SuperServer 1029GQ-TRT

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Platform Notes (Continued)

uname -a:

Linux perf-sky2.pgi.net 3.10.0-693.17.1.el7.x86_64 #1 SMP Thu Jan 25 20:13:58
UTC 2018 x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Mar 29 15:36

SPEC is set to: /local/home/aglobus/spec-accel
Filesystem Type Size Used Avail Use% Mounted on
/dev/mapper/centos_sky2-root xfs 472G 60G 413G 13% /

Additional information from dmidecode:

Warning: Use caution when you interpret this section. The 'dmidecode' program
takes system data which is "intended to allow hardware to be accurately
determined", but the intent may not be met, as there are frequent changes to
hardware, firmware, and the "DMTF SMBIOS" standard.

CUDA Driver Version: 9010
NVRM version: NVIDIA UNIX x86_64 Kernel Module 390.46
Device Number: 0
Device Name: Tesla V100-PCIE-16GB
Device Revision Number: 7.0
Global Memory Size: 16945512448
Number of Multiprocessors: 80
Concurrent Copy and Execution: Yes
Total Constant Memory: 65536
Total Shared Memory per Block: 49152
Registers per Block: 65536
Warp Size: 32
Maximum Threads per Block: 1024
Maximum Block Dimensions: 1024, 1024, 64
Maximum Grid Dimensions: 2147483647 x 65535 x 65535
Maximum Memory Pitch: 2147483647B
Texture Alignment: 512B
Clock Rate: 1380 MHz
Execution Timeout: No
Integrated Device: No
Can Map Host Memory: Yes
Compute Mode: default
Concurrent Kernels: Yes
ECC Enabled: Yes
Memory Clock Rate: 877 MHz
Memory Bus Width: 4096 bits
L2 Cache Size: 6291456 bytes
Max Threads Per SMP: 2048
Async Engines: 7

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Supermicro
(Test Sponsor: NVIDIA Corporation)

Tesla V100-PCIE-16GB
SuperServer 1029GQ-TRT

SPECaccel_acc_peak = 11.5
SPECaccel_acc_base = 11.5

Platform Notes (Continued)

Unified Addressing: Yes
Managed Memory: Yes
Concurrent Managed Memory: Yes
Preemption Supported: Yes
Cooperative Launch: Yes
Multi-Device: Yes
PGI Default Target: -ta=tesla:cc70

General Notes
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown) is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1) is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2) is mitigated in the system as tested and documented.

Base Compiler Invocation

C benchmarks:
pgcc

Fortran benchmarks:
pgfortran

Benchmarks using both Fortran and C:
pgcc pgfortran

Base Optimization Flags

C benchmarks:
-Mllvm -V18.7 -fast -Mfprelaxed -Mnuniform -acc -ta=tesla:cc70

Fortran benchmarks:
-Mllvm -V18.7 -fast -Mfprelaxed -Mnuniform -acc -ta=tesla:cc70

Benchmarks using both Fortran and C:
353.clvrleaf: -Mllvm -V18.7 -fast -Mfprelaxed -Mnuniform -acc -ta=tesla:cc70
359.miniGhost: -Mllvm -V18.7 -fast -Mfprelaxed -Mnuniform -acc -ta=tesla:cc70 -Mnomain
**SPEC ACCEL ACC Result**

**Supermicro**  
(Test Sponsor: NVIDIA Corporation)

**Tesla V100-PCIE-16GB**  
SuperServer 1029GQ-TRT  

<table>
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<tr>
<th>ACCEL license:</th>
<th>019</th>
<th>Test date:</th>
<th>Jul-2018</th>
</tr>
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<tbody>
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<td>Test sponsor:</td>
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</tr>
</tbody>
</table>

**SPECaccel_acc_peak = 11.5**

**SPECaccel_acc_base = 11.5**

---

### Peak Optimization Flags

**C benchmarks:**

- 303.ostencil: basepeak = yes
- 304.olbm: basepeak = yes
- 314.omriq: basepeak = yes
- 352.ep: basepeak = yes
- 354.cg: basepeak = yes
- 357.csp: basepeak = yes
- 370.bt: basepeak = yes

**Fortran benchmarks:**

- 350.md: basepeak = yes
- 351.palm: basepeak = yes
- 355.seismic: basepeak = yes
- 356.sp: basepeak = yes
- 360.ilbdc: basepeak = yes
- 363.swim: basepeak = yes

**Benchmarks using both Fortran and C:**

- 353.clvleaf: basepeak = yes
- 359.miniGhost: basepeak = yes

---

The flags files that were used to format this result can be browsed at

- [https://www.spec.org/accel/flags/pgi2018_flags.html](https://www.spec.org/accel/flags/pgi2018_flags.html)

You can also download the XML flags sources by saving the following links:

- [https://www.spec.org/accel/flags/PGI-Platform-Multicore-OMP.xml](https://www.spec.org/accel/flags/PGI-Platform-Multicore-OMP.xml)
- [https://www.spec.org/accel/flags/pgi2018_flags.xml](https://www.spec.org/accel/flags/pgi2018_flags.xml)
Supermicro
(Test Sponsor: NVIDIA Corporation)

Tesla V100-PCIE-16GB
SuperServer 1029GQ-TRT

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| SPECaccel_acc_base = 11.5 |

| ACCEL license: 019 | Test date: Jul-2018 |
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For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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